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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/719,526	12/13/2000	Kazuhito Hatoh	10059-368US	8925

570 7590 05/16/2005

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ONE COMMERCE SQUARE
2005 MARKET STREET, SUITE 2200
PHILADELPHIA, PA 19103

EXAMINER

CREPEAU, JONATHAN

ART UNIT	PAPER NUMBER
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1746

DATE MAILED: 05/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/719,526

Applicant(s)

HATOH ET AL.

Examiner

Jonathan S. Crepeau

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 22, 2005 has been entered.

This Office action addresses newly added claims 12-17. Applicant's declaration under 37 CFR 1.132 has been considered but the claims remain rejected in view of the Chow reference, in particular, a newly cited teaching in that reference. This action is non-final.

Claim Rejections - 35 USC § 103

2. Claims 12-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chow et al (U.S. Patent 5,284,718) in view of JP 6-132038.

Chow et al. teach a fuel cell comprising an active section and a humidification section (see Fig. 1). Each unit cell in the active section is formed from electrode catalyst layers sandwiching a first polymer electrolyte membrane and separator plates containing reactant grooves (see col. 6, line 49 et seq.). The stack further contains an insulating plate (14), a piston plate (17), current collector (bus) plates (20, 21), and end plates (11, 12). The humidification

section contains humidification units which comprise a second polymer membrane (43) sandwiched by carbon paper sheets (44, 50) and flow plates (41, 39) (see Fig. 13; col. 10, lines 21-41). The humidification units function by transferring water from a liquid water stream across the membrane to an incoming reactant gas. The humidification section contains oxidant humidifying plates (41) on the left side thereof and fuel humidifying plates (42) on the right side thereof (see Fig. 1). The first and second polymer membranes are the same (see col. 10, line 25). A plurality of unit cells and a plurality of humidification units are disposed within the endplates of the stack (see Fig. 1). The humidification units are installed between a current collector plate (21) and the piston plate (17) (see Fig. 1). The humidification units are also installed between the insulating plate (14) and an end plate (12) (see Fig. 1). The first and second membranes may have a thickness about 0.001 to about 0.005 inches (25-127 microns) (column 2, line 44).

Chow et al. do not expressly teach that an incoming gas is contacted with a discharged gas in the humidification units, as recited in claim 12. The reference further does not teach that the piston plate is electrically insulating, as recited in claim 16. The reference also does not teach that the fuel humidifying plates alternate with the oxidant humidifying plates, as recited in claim 12.

However, the latter limitation is not considered to distinguish over the reference because it merely represents the rearrangement of the humidifying plates of Chow. The oxidant plates of the humidification section of Chow are on the left side thereof and the fuel plates on the right side thereof. The rearrangement of these plates into an alternating configuration would be well

within the skill of the art and is not considered to involve an inventive step. Generally, such a rearrangement of parts is not considered to distinguish over a reference (MPEP §2144.04(VI)).

Further, the artisan would be sufficiently skilled to ascertain that the piston plate (17) of Chow would be electrically insulating, as is required by claim 16. The plate lies outside the area sandwiched by the bus plates (20, 21) which are used to collect current from active section of the stack. An electrically insulating member would be desirable at the end of the stack adjacent to the humidification section in order to prevent electrical current from “leaking” from the end of the stack. Accordingly, the artisan would be able to ascertain that the piston plate (17) has an electrically insulating function.

Additionally, in the abstract and Figure 1, JP 6-132038 teaches an apparatus comprising a fuel cell stack (10) in combination with total heat exchangers (11, 21) for concurrently moving heat and humidity from discharged gases toward the incoming fuel and oxidant gases (see abstract; Fig. 1).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated by the disclosure of JP ‘038 to flow incoming and discharged gases through the humidification units of Chow et al. to effect heat and humidity exchange between the gases. In the abstract, JP ‘038 teaches that the purpose of the invention is to provide a system in which a “stable amount of humidification is obtained in accordance with a change in the amount of reaction gas, the miniaturization and the capacity increase of which is easy to make.” Further, in paragraph 18 of the machine translation, JP ‘038 teaches that the apparatus does not need a supply of an external

heat source or water, that “easy steam humidification equipment” can be used, and that “the reactant gas which corresponded to change of a load without retardation, and humidified and preheated can be supplied to a fuel cell.” Accordingly, the artisan would be motivated to flow a discharged gas instead of a liquid water stream through the humidifiers of Chow et al. in hopes of obtaining these advantages.

Response to Arguments

3. Applicant’s arguments filed April 22, 2005 have been fully considered but they are not persuasive. First, it is noted that Applicant’s declaration under 37 CFR 1.132 has merit with regard to the previous grounds of rejection. However, it is believed that a relevant teaching in the Chow reference has been overlooked thus far during the prosecution of the instant application. Previously, both the Examiner and Applicant stated that Chow does not teach a membrane thickness below 89 microns (0.0035 inches) (col. 7, line 16 of Chow). However, as set forth in the rejection above, at column 2, line 44, Chow teaches that “preferably, the membrane has a thickness of about 0.001 to about 0.005 inches” (25-127 microns). Thus, Chow does contemplate thicknesses below 89 microns, and further, it may reasonably be said that Chow anticipates the claimed ranges of less than or equal to about 50 (about 25) microns. As such, the instant claims are still not considered to be distinguished over Chow.

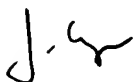
Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (571) 272-1299.

The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr, can be reached at (571) 272-1414. The phone number for the organization where this application or proceeding is assigned is (571) 272-1700. Documents may be faxed to the central fax server at (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jonathan Crepeau
Primary Examiner
Art Unit 1746
May 12, 2005